
Editorial

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The main goal of the reliability and dependability analysis as well as faults detection and diagnosis methods consists in the protection of people as well as industrial parts during the industrial process life. To perform protection, prevention and risk management, performance evaluation methods during either conception or exploitation stages, have to be developed and implemented. This special issue of *IJAIS* is about performance evaluation and risk management for industrial systems. The contributions are extended version of the results presented during the conference organised by Le Havre University, France, in May 2009.

The first part of the special issue concerns the reliability analysis. Industrial and energy based applications are mainly concerned.

Dynamic reliability is study with Petri nets (Guillerm et al.), in order to deal with both continuous and discrete dynamic. A new approach for reliability analysis of hybrid systems is presented.

Maintenance strategies are also concerned. Failure may be predict from maintenance events observation (Vrignat et al.). An application based on bread production is presented.

Performance assessment of systems in the context of dynamic reliability (Castañeda et al.) is investigated. A stochastic hybrid automaton is used to model the system which is supposed to contain conflicts. The temperature control system of an oven is presented.

The second part of this special issue concerns faults detection and diagnosis and fault tolerant control: time-frequency detection methods, diagnosis based on artificial intelligence methods, such as neural networks or fuzzy logic, performance analysis and optimisation problems are investigated.

The non-linear principal component analysis (NL-PCA) coupled with neural networks is used to extract the non-linear intercorrelation (Bara et al.). Radial basis function neural networks and NL-PCA are also used to obtain a multiple sensor fault detection and isolation (Harkat et al.).

These methods are applied on sensor signals for air quality monitoring in the region of Annaba, Algeria.

Diagnosis based on vibration data has been proposed to detect failure of embedded systems (Bennouna et al.). Wavelet transform and neural networks are combined to perform the diagnosis. Printed circuit board are used to test and illustrate the proposed method.

A multivariable fuzzy controller is developed to control multi-motors systems (Zizouni et al.), comparisons with classical PI controller are made on a system composed of three engines.

At last, fractional behaviour of the fractance is presented and the robustness of the RLC-based controller is studied (Daou et al.). Comparisons between several arrangements of the RLC cells are made.

All these contributions may be considered as a fresh start for further research.